U. S. DEPARTMENT OF AGRICULTURE,

BUREAU OF SOILS.

IN COOPERATION WITH THE ALABAMA DEPARTMENT OF AGRICULTURE AND INDUSTRIES.

SOIL SURVEY OF HOUSTON COUNTY, ALABAMA.

BY

R. T. AVON BURKE, IN CHARGE, AND A. T. SWEET.

[Advance Sheets—Field Operations of the Bureau of Soils, 1920.]

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[PUBLIC RESOLUTION—No. 9.]

JOINT RESOLUTION Amending public resolution numbered eight, Fifty-sixth Congress, second session, approved February twenty-third, nineteen hundred and one, "providing for the printing annually of the report on field operations of the Division of Soils, Department of Agriculture."

Resolved by the Senate and House of Representatives of the United States of America in Congress assembled, That public resolution numbered eight, Fifty-sixth Congress, second session, approved February twenty-third, nineteen hundred and one, be amended by striking out all after the resolving clause and inserting in lieu thereof the following:

That there shall be printed ten thousand five hundred copies of the report on field operations of the Division of Soils, Department of Agriculture, of which one thousand five hundred copies shall be for the use of the Senate, three thousand copies for the use of the House of Representatives, and six thousand copies for the use of the Department of Agriculture: *Provided*, that in addition to the number of copies above provided for there shall be printed, as soon as the manuscript can be prepared, with the necessary maps and illustrations to accompany it, a report on each area surveyed, in the form of advance sheets, bound in paper covers, of which five hundred copies shall be for the use of each Senator from the State, two thousand copies for the use of each Representative for the congressional district or districts in which the survey is made, and one thousand copies for the use of the Department of Agriculture.

Approved, March 14, 1904.

[On July 1, 1901, the Division of Soils was reorganized as the Bureau of Soils.]

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SOIL SURVEY OF HOUSTON COUNTY, ALABAMA.

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DESCRIPTION OF THE AREA.

Houston County is located in the southeastern corner of the State of Alabama. It is bounded on the south by the State of Florida and on the east by the Chattahoochee River, which separates it from Georgia. The county is almost rectangular in shape, with the exception of a panhandle, which extends westward between Geneva County and Dale County. It has an area of 579 square miles, or 370,560 acres. Its greatest length east and west is $35\frac{1}{2}$ miles, and its greatest width north and south is $21\frac{1}{4}$ miles.

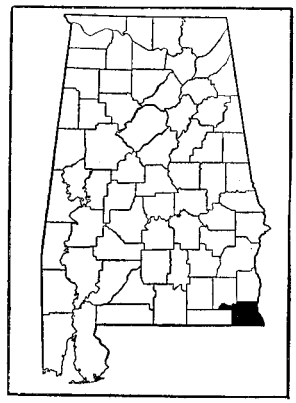

FIG. 10.—Sketch map showing location of the Houston County area, Alabama.

The surface features of Houston County comprise level, undulating, and gently rolling to rolling areas. The greater part of the county, however, is gently rolling. Some of the more nearly level to undulating areas are developed in the central and southern parts of the county, while the more rolling or slightly broken areas lie in the northern part along the Little Choctawhatchee River and in the eastern part along the Chattahoochee River.

Areas of Swamp are developed along the larger creeks, especially Cowarts and Big Creeks, and along Choctawhatchee and Little Choctawhatchee Rivers. Along the Chattahoochee and Little Choctawhatchee Rivers are rather extensive second bottoms or terraces. These areas lie above ordinary overflow and have generally a level topography.

The uplands in the northern part of the county consist of broad ridges and divides which are broken by natural drainage ways. In the southern part of the county the surface is flatter, and the drainage systems are not so well developed; but there are many narrow, depressed areas of Plummer sandy loam, an open, porous soil, which serve as drainage ways for the run-off from the higher land.

The drainage of the county is carried by the Chattahoochee and Choctawhatchee Rivers, and Cowarts, Big, Omusee, and Hurricane Creeks. Practically all parts of the county are well drained. Only in some of the flatter areas in the southern part is drainage un-

developed. Very few of the streams of the county flow directly into the Chattahoochee River.

Houston County was formed by act of legislature, February 9, 1903, from the southern parts of Henry and Dale Counties and the eastern part of Geneva County.

Most of the inhabitants are descendants of people that came from near-by counties or neighboring States. The county is most thickly settled in the northern and central parts, although the population is well distributed and there are no large unsettled areas. The census report for 1920 gives the population of the county as 37,334. The rural population, which includes the country districts and towns with less than 2,500 inhabitants, constitutes 73.1 per cent of the total. The density is 64.5 persons per square mile.

Dothan, the county seat, with a population of 10,034, is a wholesale center and distributing point for southwestern Georgia, western Florida, and southern Alabama. It has excellent schools, churches, hospitals, banking facilities, and stores, and a considerable number of manufacturing industries. Smaller towns and villages located in the county are Ashford, Columbia, Cottonwood, Cowarts, Gordon, Kinsey, Madrid, Pansey, Taylor, and Webb.

Houston County has excellent transportation facilities. The Atlantic Coast Line, Montgomery-Savannah division, crosses the county in a general northwest-southeast direction, passing through Dothan, Cowarts, Ashford, and Gordon. A branch of the Central of Georgia Railway enters Houston County from Geneva County, passing through Taylor, Dothan, and Webb, and leaving the county at Williams, in the northeastern part. Dothan is the terminus of the Atlanta & St. Andrews Bay Railway, which extends through the central part of the county. Madrid and Hodgesville are on this line. Cowarts is the terminus of the Alabama, Florida & Gulf Railroad. The railroads are supplemented by a good system of public roads, which reach all parts of the county. Twelve roads radiating from the county seat are graded.

The county is well supplied with churches and schools. Rural free delivery routes and telephones reach nearly all farms.

Montgomery, Jacksonville, and Atlanta are the principal outside markets for the agricultural products of the county. Dothan and other towns handle a considerable part of the produce. Shipping points and sidings are available along the railroads in all parts of the county.

CLIMATE.

There are no climatic records available from Weather Bureau observers in Houston County, but records of the Weather Bureau stations at Ozark, and De Funiak Springs, the former in Dale County to the north of Houston County and the latter south of it in Florida,

with elevations, respectively, of 400 and 193 feet above sea level, are given in tabulated form below. Although these stations are not located in the county, a mean of the two represents the local climatic conditions with sufficient accuracy. Some local variations, however, may be expected in an area that has elevations ranging from 140 to 360 feet above sea level.

The climate of Houston County is mild and comparatively equable, the waters of the Gulf of Mexico, which is only 80 miles from Dothan, exerting a modifying influence upon the temperature of both winter and summer. The summers are long, with some hot, oppressive days with temperatures above 100° F., but the nights are nearly always cool and pleasant. The weather in winter is much more changeable than in summer, being characterized by alternating periods of moderate temperature and cold of 3 to 6 days duration. The cold spells are commonly preceded by rain and infrequently by snow flurries.

The average frost-free period at Ozark is 245 and at De Funiak Springs 261 days, so that it is safe to assume an average growing season for Houston approximating 250 days.

The tables following give the essential details of climate as recorded at the two stations already mentioned. In interpreting the figures the reader should keep in mind that the conditions in Houston County lie between the conditions represented in these tables.

Normal monthly, seasonal, and annual temperature and precipitation at De Funiak Springs, Walton County, Fla.

[Elevation, 193 feet.]

Month.	Temperature.			Precipitation.		
	Mean.	Absolute maximum.	Absolute minimum.	Mean.	Total amount for the driest year (1904).	Total amount for the wettest year (1900).
	°F.	°F.	°F.	*Inches.*	*Inches.*	*Inches.*
December	52.1	80	12	5.10	5.03	7.21
January	51.7	79	13	3.89	5.54	2.31
February	52.7	82	0	6.74	2.95	12.55
Winter	52.1	82	0	15.73	13.52	22.07
March	61.5	91	22	5.21	3.34	8.57
April	65.9	95	31	3.13	2.25	3.90
May	74.2	100	42	4.07	4.29	4.63
Spring	67.2	100	22	12.41	9.88	17.10
June	79.7	105	51	5.67	4.47	12.04
July	80.6	105	60	7.45	3.21	10.44
August	80.8	102	60	9.24	10.78	.87
Summer	80.3	105	51	22.36	18.46	23.35

Normal monthly, seasonal, and annual temperature and precipitation, etc.—Con.

Month.	Temperature.			Precipitation.		
	Mean.	Absolute maximum.	Absolute minimum.	Mean.	Total amount for the driest year (1904).	Total amount for the wettest year (1900).
	°F.	°F.	°F.	*Inches.*	*Inches.*	*Inches.*
September	77.7	102	45	6.37	1.44	5.24
October	68.5	97	30	3.57	1.06	4.82
November	59.0	85	21	3.63	3.54	2.64
Fall	68.4	102	21	13.57	6.04	12.70
Year	67.0	105	0	64.07	47.90	75.22

Normal monthly, seasonal, and annual temperature and precipitation at Ozark, Dale County, Ala.

[Elevation, 400 feet.]

Month.	Temperature.			Precipitation.		
	Mean.	Absolute maximum.	Absolute minimum.	Mean.	Total amount for the driest year (1904).	Total amount for the wettest year (1900).
	°F.	°F.	°F.	*Inches.*	*Inches.*	*Inches.*
December	49.6	81	17	4.83	5.61	11.54
January	48.7	79	19	3.43	2.55	2.55
February	49.4	84	10	5.46	5.75	12.67
Winter	49.2	84	10	13.72	13.91	26.76
March	61.1	87	26	5.11	5.19	8.07
April	64.9	93	30	3.95	2.80	6.42
May	67.3	101	40	3.48	.66	4.93
Spring	64.4	101	26	12.54	8.65	19.42
June	79.3	104	47	3.88	3.39	7.78
July	80.6	103	60	5.42	4.20	6.11
August	80.9	103	62	4.38	7.77	2.62
Summer	80.3	104	47	13.68	15.36	16.51
September	77.2	98	45	4.57	.33	2.16
October	66.0	96	31	2.54	T.	3.52
November	56.5	86	21	2.46	2.23	1.99
Fall	66.6	98	21	9.57	2.56	7.67
Year	65.1	104	10	49.51	40.48	70.36

AGRICULTURE.

The country now included in Houston County once supported a magnificent growth of longleaf pine. Much of this forest was turpentined for several years, and then the sawmills began operations,

and as a result very little merchantable timber remains. The first settlements were made in the more rolling country in the northern and northeastern parts of the county. The farmers came in from North Carolina, South Carolina, Georgia, and northern Alabama.

The agricultural development of Houston County is generally considered to have begun with the arrival of the railroads and the subsequent removal of the great forest. Development was slow at first, until it was found that commercial fertilizers could be profitably used on the cut-over pine lands. Then settlement began to keep up with deforestation. These lands to-day constitute some of the most productive soils in the State.

According to the census of 1920, 86.6 per cent of the total area is in farms, of which 65.8 per cent is classed as improved land.

In 1909 cotton occupied the largest acreage of any crop. It was grown on 68,769 acres, with a production of 27,099 bales, or a little over two-fifths bale per acre. Corn was produced on 58,685 acres, with an average yield of a little more than 14 bushels per acre. Peanuts occupied 14,911 acres and yielded 244,899 bushels, or over 16 bushels per acre. Oats were grown on 4,698 acres and produced 70,376 bushels, or a little over 17 bushels per acre. Vegetables, including sweet potatoes and Irish potatoes, were grown on 3,839 acres. Tame or cultivated grasses on 1,302 acres yielded 1,188 tons of hay. Sugar cane occupied 1,004 acres, with a production of 185,330 gallons of sirup, or about 184 gallons per acre.

The census of 1910 also reports 8,035 peach trees in the county, 463 pecan trees, 298 pear trees, 18,088 plum and prune trees, 839 fig trees, and 307 grapevines. There were 14,401 cattle in the county, 1,538 horses, 4,291 mules, 51,146 swine, 769 sheep, and 1,809 goats.

Since 1909 there has been some change and considerable development along agricultural lines. The agriculture practiced at the present time might be described as general farming, consisting of the production of a fiber crop, subsistence crops, and live stock.

Corn now leads in acreage. According to the census of 1920, corn was grown in 1919 on 78,222 acres, the production reaching 945,780 bushels, or an average of 12.2 bushels per acre. In considering the average yield per acre, allowance must be made for the fact that in most fields of corn as much as one-third of the land is devoted to velvet beans or cowpeas. Corn is grown on nearly all farms. Most of it is used for feed for live stock and a small proportion is reserved for meal. Occasionally there is a surplus to be sold in more remote markets. The corn grown is of many varieties, but the dent type predominates.

During the decade 1910 to 1920, as a result of the loss caused by the boll weevil, cotton decreased markedly in acreage. It is grown to some extent on nearly all the farms, with the exception of those lands subject to overflow. It is the chief cash crop of the county.

In 1919 cotton was grown on 49,109 acres, with a production of 12,189 bales. Most of the cotton grown is of the early maturing varieties, largely of the big-boll type. Important among the varieties are Cleveland Big Boll, Half and Half, Toole, and King.

Hay is a crop of considerable importance. It generally consists of peanut vines, cowpea vines, and crab grass. More than half of the hay produced consists of peanut vines. The crab grass is a volunteer crop. Most of the cowpeas planted are of wilt-resistant varieties, chiefly Brabham, Iron, and Whippoorwill. Most of this hay is consumed on the farm.

Peanuts occupied 27,412 acres in 1919 and yielded 540,318 bushels, or nearly 20 bushels per acre. They are both a cash crop and a subsistence crop, and are grown to some extent on nearly all farms. About one-half the crop is pastured; the other half is harvested and sold. Most of the nuts grown are of the varieties known as the Spanish, North Carolina, and Virginia Runner.

Velvet beans are an important crop. They are grown to some extent on nearly all farms, and interplanted with corn, one row of beans and two of corn. A variety known as the Speckle is the most popular sort.

Sweet potatoes occupied an acreage of 1,443 acres in 1919, with a production of 162,701 bushels. The principal varieties grown are the Porto Rico yams, Nancy Hall, and Triumph. The surplus crop is utilized largely by the canning plant at Dothan.

Sugar cane, grown on 1,311 acres, gave a production of 170,559 gallons of sirup. A considerable part of this is sold outside the county.

Oats are sown to some extent on nearly all farms, being utilized mainly as a winter cover crop and cut the following summer for hay, though a small part of the crop is threshed. The hay is consumed on the farm where produced. The principal varieties grown are Fulghum, Burt, Appler, and Texas Rust Proof.

The production of watermelons promises to be an important industry in this county. Many melons are now shipped to northern markets. They are grown throughout the county, but most of them are shipped from Ashford, Cottonwood, and Dothan. Vegetables are grown mainly for home use. On a few farms truck crops are grown for local markets, and effort is being made to extend shipment to outside points. The truck crops now grown to some extent for shipment are cucumbers, tomatoes, onions, cabbage, beans, and melons. Most of the fruits and nuts grown are used at home, but some strawberries are shipped to outside markets.

The census of 1920 reports 1,529 horses and 5,533 mules, 10,859 dairy cattle, and 2,903 beef cattle in the county in January, 1920. The dairy cattle consist principally of Jersey and Holstein grades. The greater part of the dairy products is used in the home; the local

markets absorb the rest. The beef cattle are mostly grade animals brought in and pastured on the fields of velvet beans.

The raising of hogs is the most important live-stock industry in this section. The census places the number of hogs in Houston County on January 1, 1920, at 55,120. Markets for the proper grading and shipment of hogs are well distributed throughout the county. Most of the hogs finally reach Montgomery, Andalusia, and other outside markets. The popular breeds of hogs are the Duroc-Jersey, Poland-China, and Hampshire, and most of the animals sold are grades of one or more of these breeds, but there appears to be a tendency to raise more purebred stock.

Nearly all the farmers recognize the difference in the value of different types of soil for various crops, but little effort is made to use the soils for the purposes to which they are best suited. It is generally known that some kinds of garden truck and fruit do better on the sands and lighter soils than on the heavier types, that corn, grain, cotton, and forage crops make the best growth on the heavier uplands or those soils which have a good sandy clay subsoil, and that sugar cane and sorghum do best on the moist and less well-drained soils, provided they are not too wet; yet the general practice is to grow crops indiscriminately on all classes of lands without reference to their special adaptations. Little or no attention is given to the selection of particular varieties of the various crops grown, although it is generally recognized that some varieties do better than others on certain soil types.

The plowing is generally shallow and, with exception of one or two crops, is usually done in the spring. Thus in the preparation of land for oats after a hay crop, the land is broken in the fall, and when cowpeas for hay follow fall-sown oats, it is broken in early summer. Most of the plowing is done with mules and horses, although there are a few tractors in the county. Nearly every farm is equipped with disk plows and turning plows, some riding cultivators, various kinds of harrows, and seed drills and planters.

Systematic rotation of crops is not generally practiced in Houston County. In many cases cotton or corn is grown in the same field for a number of years in succession, though sometimes these crops are alternated. The yields are maintained chiefly by the use of commercial fertilizer on the cotton land, and to a less extent on the corn land, where more dependence is placed on the restorative effect of cowpeas, velvet beans, and peanuts grown in corn middles, grazed down by live stock, and turned under.

The fertilizers most largely used are cottonseed meal, ground phosphate rock, and nitrate of soda. All the available manure is applied to the fields, but the supply is small. Cotton is generally fertilized with 100 to 150 pounds of cottonseed meal and 200 to 300 pounds of phosphate rock to the acre. This is sometimes followed

with an application of nitrate of soda at the rate of 75 to 100 pounds per acre. The manure is applied to corn land, although phosphate rock and cottonseed meal are used in addition in various amounts. A complete fertilizer consisting of an 8–3–3 or 8–2–2[1] mixture is used by many farmers.

The supply of farm labor is not large. It is drawn mainly from the negro race. Farm laborers at the time of the survey (1920) were receiving $30 a month with board. During harvesting seasons day laborers are paid $2 a day.

Farm lands range in price from $15 to $125 an acre, their value depending to a great extent on location and condition of improvements. Much good land is available at $50 an acre.

The farmhouses are substantial one-story and two-story frame structures. The barns are usually large enough to house the necessary work stock and cattle. The outbuildings, including the corncribs and wagon and tool sheds, and the fences, are generally in good condition. Some of the farms are equipped with silos, either of wood or cement construction. In general the farm buildings indicate the present prosperity of the county.

Houston County is one of the best agricultural counties in Alabama. It possesses large areas of good land which is being developed and which offers opportunities to those seeking a place where a great variety of crops can be successfully produced.

SOILS.[2]

Houston County is located within the Coastal Plain division of the Atlantic seaboard, and the soils and topography are typical of the central part of this division. The soil materials consist of beds of sand, sandy clays, and clays laid down when this part of Alabama was covered by the sea, but these beds have stood for ages above sea level and have undergone much weathering and erosion.

The soils derived from these modified beds differ in color, texture, structure, topography, and drainage conditions. They are dominantly light in color, ranging from gray and grayish brown to red in the surface soil, and from yellow to red or yellow and gray mottled in the subsoil. The soils are low in organic matter, and this accounts for their prevailingly light color. The region was originally occupied by forests, and there has been little opportunity for the accumulation of vegetable matter. In the areas still supporting a forest growth there is found in places a surface layer of vegetable mold, but this layer is very shallow, and only a small amount of organic matter has become mixed with the soil.

[1] Percentages of phosphoric acid, nitrogen, and potash.

[2] The map of Houston County does not accord in all contacts with that of Henry County, made in 1908, nor that of Dale County, made in 1910. This is due to an advance in knowledge of the soils of this part of the State since the earlier surveys have been made and to consequent changes in classification. Much greater detail is shown in the Houston County map.

According to local designation there are two general classes of soils in the upland part of the county, namely, the "red lands" and the "gray lands." The former, which include soils of the Greenville and Orangeburg series, are developed principally in the panhandle and across the extreme northern edge of the county. The typical gray or grayish-brown soils with yellow, friable clay subsoils, occupy the greater part of the county and are well developed in the vicinity of Ashford and Cowarts, and in general throughout the central and eastern parts of the county. The soils belong chiefly to the Norfolk, Ruston, and Tifton series.

The soils of the county are prevailingly sandy in the surface layer; that is, the largest and most important areas are sandy loams and sands of medium texture. The medium and coarser textured soils occur across the northern part of the county; in the south-central and southern parts the soils become slightly finer in texture, but there is no sharp line of demarcation between the region of medium and of fine sandy loams.

Practically all of the well-drained upland soils are either neutral or slightly acid in character. There are no carbonates in the upper 3 feet of material in Houston County. The heavy rainfall and the continuous leaching have prevented the accumulation of any carbonates, even if these may have been present in the original beds of material. Most of these soils respond to a liberal application of lime, particularly when large amounts of barnyard manure or green-manuring crops have been turned under. All of the soils respond readily to the use of commercial fertilizers. When these soils are supplied with larger quantities of organic matter, thus enabling them to absorb more rainfall, a greater benefit may be expected from the use of fertilizers. This organic matter will not only add the needed nitrogen to these light-colored soils, but it will improve the physical character. These soils are similar in their chemical composition to large areas of soil in the Coastal Plains region. In their natural condition they are not high in the elements of plant food, but they can be readily improved and built up to a high state of productiveness, and this fairly easily maintained, by proper handling of the soil, the incorporation of organic matter, and by the use of commercial fertilizers.

The Norfolk, Orangeburg, Greenville, and Tifton types represent the soils upon which the greater part of the agriculture of the county is based. These are well-drained soils, with a friable, mellow structure, and are easily cultivated. With the exception of the Swamp, Grady clay loam, and Plummer sandy loam, all the soils occupy a favorable situation, as regards drainage and topography, for the use of improved farm machinery. The Grady soils occupy the saucer-like depressions and usually lie a few feet below the surrounding soils. The Plummer soils are characteristically wet and occupy low positions.

The upland soils of the county are grouped into the Greenville, Orangeburg, Ruston, Norfolk, Tifton, Grady, and Plummer series. The soils of the second bottoms or terraces are grouped into the Cahaba and Kalmia series, and those of the first bottoms into the Congaree series and Swamp. This grouping of the soils into series is based on color, structure, origin, topography, and drainage conditions. The series are divided into types on the basis of texture.

The types of the Greenville series are characterized by reddish-brown to red surface soils and a red subsoil. The series is represented in Houston County by the Greenville loamy sand and sandy loam.

The Orangeburg series includes types with gray to brown surface soils and a bright-red to deep-red subsoil. This series is represented in this survey by one type, the sandy loam.

The Ruston series is characterized by the gray to grayish-brown color of the surface soils and the reddish-yellow to yellowish-red, or in some places mottled red and yellow color, and moderately friable structure of the subsoil. It holds an intermediate position between the Orangeburg and Norfolk soils with respect to color of the subsoil. It is represented in this county by the Ruston sand, loamy sand, and sandy loam, the last having a pebbly phase.

The types of the Norfolk series are characterized by gray to light-brown surface soils and a pale-yellow to yellow subsoil. The series is well represented in the present survey, four types, one with two phases, being mapped. These are the sand, loamy sand, sandy loam, and fine sandy loam.

The surface soils of types of the Tifton series are prevailingly gray, ranging to brownish gray. The subsoil is a bright-yellow friable sandy clay. It differs particularly from the Norfolk series in the occurrence of small iron concretions or accretions on the surface and throughout the soil section. The Tifton sandy loam is mapped in this county.

The types of the Grady series have gray to dark-gray surface soils and a mottled yellow and gray, or drab and red, tough, plastic clay subsoil. The series is represented here by the Grady clay loam. It is developed in the upland sinks, which have been developed through solution of the underlying limestone.

The surface soils of types in the Plummer series are light gray to ashy gray or mottled gray and brown. The subsoil is gray or mottled yellow and gray, and in places presents occasional red mottling. The drainage is generally poor. Only the sandy loam of this series is mapped in this county.

The Cahaba series, a terrace series, consists of types with gray to brown surface soils and a yellowish-red to reddish-brown subsoil. The series is developed on the second bottoms or terraces of streams. It is represented by the Cahaba sandy loam, although this includes some fine sand and loamy sand.

The Kalmia series, also developed on terraces, consists of types with gray to yellowish-gray surface soils and a yellow friable subsoil. It is represented here by the fine sand and fine sandy loam. The former as mapped includes some areas of Kalmia sand.

The types of the Congaree series are characterized by brown surface soils and a yellowish or reddish-brown subsoil. Both soil and subsoil contain a noticeable amount of small mica scales. The series is represented here by the Congaree fine sand, fine sandy loam, and silty clay loam. These soils are developed in the first bottoms along the Chattahoochee River. The permanent streams of the upland are bordered by bottom lands mapped as Swamp.

The table below gives the actual and relative extent of the soil types of Houston County:

Areas of different soils.

Soil.	Acres.	Per cent.	Soil.	Acres.	Per cent.
Norfolk sandy loam	100,352	34.1	Congaree fine sandy loam	5,760	1.5
Flat phase	17,024		Greenville loamy sand	4,160	1.1
Deep phase	9,024		Cahaba sandy loam	3,968	1.1
Ruston sandy loam	61,376	18.2	Norfolk loamy sand	3,968	1.1
Pebbly phase	6,080		Ruston sand	3,200	.9
Norfolk sand	28,288	7.6	Grady clay loam	2,368	.6
Greenville sandy loam	24,448	6.6	Congaree silty clay loam	1,344	.4
Swamp	22,784	6.1	Congaree fine sand	1,344	.4
Plummer sandy loam	20,288	5.5	Kalmia fine sandy loam	1,152	.3
Tifton sandy loam	15,040	4.1	Kalmia fine sand	1,024	.3
Orangeburg sandy loam	13,120	3.5			
Ruston loamy sand	12,928	3.5	Total	370,560	
Norfolk fine sandy loam	8,960	3.1			
Flat phase	2,560				

GREENVILLE LOAMY SAND.

The surface soil of the Greenville loamy sand consists of a dull-red or reddish-brown loamy sand 6 to 10 inches deep. This is underlain by a loamy sand to light sandy loam of a dull-red color, which extends to a depth of 3 feet or more.

This is an inextensive soil. One of the largest areas occurs on the southern slope of Hurricane Creek. Other areas lie south of Little Choctawhatchee River, and one in the southeastern corner of the county on both sides of Irwin Mill Creek. Numerous smaller areas are mapped throughout the uplands. Most of the type occupies stream slopes, which may be steep or gentle. The land is thoroughly drained, and in places on the steeper slopes the run-off is both rapid and excessive. Here erosion has been active. Despite its thorough drainage, the soil holds sufficient moisture to supply the growing crops.

About 30 per cent of this type is under cultivation; the rest supports a growth of pine, with a scattering of hickory. Judging by the stumps, the growth of longleaf pine must have been excep-

tionally heavy on this soil. The cultivated land is used principally for corn and cotton, supplemented by velvet beans, peanuts, garden vegetables, and fruit. Cotton yields from one-fourth to one-half bale [3], and corn 15 to 25 bushels per acre.

The Greenville loamy sand is an easy soil to work. It warms up quickly in the spring, and crops mature early on it, although not as early as on the Norfolk sand. Crops can not be produced as economically as on the Ruston loamy sand, on account of the less favorable topography. The methods recommended for the handling of the Ruston sand and Ruston loamy sand are applicable to this type. Land of this type is valued at $30 to $50 an acre, depending on location and improvements.

GREENVILLE SANDY LOAM.

The surface soil of the Greenville sandy loam consists of a brown, reddish-brown, or dark-red sandy loam, 5 to 10 inches deep. The subsoil is a compact but friable to rather heavy sandy clay, which usually extends to a depth of 3 feet or more. The change from the surface soil to the subsoil is generally gradual. A few small areas have a scattering of iron concretions over the surface and throughout the soil section. One of these occurs 1¼ miles south and another 2½ miles north of Wilson School.

Included with this type are a few spots of Greenville clay loam. These are characterized by a shallow red sandy clay loam surface soil and a red clay subsoil. One of these occurs on the west side of Beaver Creek and another lies west of Williams. In a small area on the Florida line, southwest of Midway School, the soil is a silt loam or loam instead of a clay loam, and it may be that this particular spot is influenced by underlying limestone. The Greenville sandy loam mapped near the Chattahoochee River between Columbia and Gordon occupies the only recognized third terrace of the Chattahoochee River and would have been mapped as Amite sandy loam if the surface had been smoother.

The Greenville sandy loam is one of the important types of the county. It is developed in all parts, with principal developments in the northern, northwestern, south-central, and southwestern sections. It occurs in the vicinity of Wicksburg and Pilgrim Church, on the uplands in places south of Little Choctawhatchee River, northwest, southwest, and northeast of Murphy Mill School, north and south of the headwaters of Beaver Creek, north and south of Omusee Creek, between Midway School and the Florida line, and in places on the upland slopes of Chattahoochee River. The topography varies from flat to gently rolling. Drainage generally is well established, but ditching has been found necessary on some of the flatter areas.

Probably 80 per cent of this type is under cultivation; the rest supports a growth of pine, through which there is a scattering of

[3] Cotton yields given in this report are those obtained under boll-weevil conditions.

oak, hickory, and other trees. This soil, which is locally known as "red land," is considered a valuable soil for general farming. Where cultivated it is used chiefly for the production of corn and cotton. Minor crops are oats, cowpeas, velvet beans, peanuts, potatoes, garden vegetables, and fruit. Cotton yields from one-fourth to one-half bale, corn 15 to 40 bushels, Irish potatoes 40 to 150 bushels, and sweet potatoes 50 to 250 bushels per acre. Velvet beans, peanuts, and less commonly cowpeas are planted between the corn rows, and oats, cowpeas, and peanuts are frequently grown alone for pasture or forage. All kinds of garden vegetables yield well, but the crops do not mature as early as on the sand and loamy sand types. Only sufficient fruit is grown to supply home needs. It consists chiefly of peaches, plums, and figs.

The Greenville sandy loam has a high content of organic matter, is easy to work, and well drained. It has a surface favorable to the use of labor-saving machinery, and thus offers opportunity for the low-cost production of intensive crops. Land of this type is valued at $50 to $100 an acre, the price depending largely on location and on the character of the improvements.

Cuban cigar-filler tobacco is successfully produced on this type in Florida and Georgia. It does especially well where the soil is shallow. On areas of deeper soil both Cuban and Sumatra wrapper tobacco are successfully grown. The industry is not developed in Houston County.

A wide diversity of crops is produced on this type, but the crops are not rotated systematically. The soil is admirably adapted to the production of truck, fruit, and forage, in addition to corn, cotton, and tobacco. The yields are easily maintained or increased by keeping up the supply of organic matter and by systematic crop rotation, increasing the interval between corn and cotton by growing legumes, and growing forage crops in winter and summer.

ORANGEBURG SANDY LOAM.

The surface soil of the Orangeburg sandy loam consists of a gray to yellowish-brown loamy sand, underlain at 5 to 10 inches by reddish-yellow or yellowish-red loamy sand or sandy loam, which usually extends to a depth of 12 to 15 inches. The subsoil is a red friable sandy clay, which extends to a depth of 3 feet or more. Scattered over the surface and distributed through the soil are occasional iron concretions. These are generally more plentiful in areas near the heads of small streams and ravines, as in the area 4 miles north of Wicksburg.

With this type are included local spots of Orangeburg or Greenville clay loam and Orangeburg sand, too small to be shown separately on the map. The clay loam occurs in eroded or washed areas and the sand in the more nearly level places or on the lower slopes.

The type also includes a few areas in which the material conforms to that of the Orangeburg gravelly sandy loam, containing a noticeable quantity of cherty gravel. In general more coarse sand is present in the type as it occurs in the northern and northwestern parts of the county than elsewhere.

The Orangeburg sandy loam is one of the less extensive soils of the county, covering in all about 25 square miles. The principal areas are developed in the northern section, particularly in the vicinity of Pilgrim Church, and north of Mount Zion Church on both sides of Beaver Creek. It also occurs in places along the bottoms of Omusee Creek, in the eastern part of the county, west and southwest of Espy School, along Hurricane Creek, and in other small spots throughout the county. The topography is variable; the largest areas usually occur on the broader divides and have gently rolling surfaces, but as the streams are approached the surface is more rolling and broken.

The Orangeburg sandy loam is recognized as one of the good soils in the county for general farm crops. It is not quite as productive as the Greenville sandy loam, but slightly more productive than the Norfolk or the Tifton sandy loam, and is developed in places to a high state of productiveness. It is easy to cultivate and retentive of moisture, and crops rarely suffer even during protracted dry spells, especially if the seed bed has been thoroughly prepared.

Probably 80 per cent of this type is under cultivation; the rest supports a growth of pine, through which there is a scattering of oak, hickory, and dogwood. The cultivated land is devoted mainly to cotton and corn and to some extent to garden truck and fruit, with occasional crops of sweet potatoes, sugar cane, and legumes. Cotton yields from one-fourth to one-half bale per acre, corn 15 to 40 bushels, sweet potatoes 40 to 150 bushels, and sugar cane 150 to 200 gallons of sirup per acre. The yields depend largely upon the quantity of fertilizer used and the efficiency with which the soil is handled. All kinds of garden vegetables do well. Peaches are grown successfully on the higher elevations. The fruit is of excellent quality and of good color, but the yields are occasionally reduced by frosts occurring late in spring. Land of this type is valued at $50 to $100 an acre, depending mainly on location and improvements.

A good quality of Cuban cigar-filler tobacco is produced on this type in other States and the crop offers an excellent opportunity in this county.

The productiveness of this type is easily maintained by the frequent use of legumes in the crop rotation. Where the slopes are too steep for the safe cultivation of field crops, they should be used for permanent pasture.

RUSTON SAND.

The surface soil of the Ruston sand is a grayish-brown to gray sand 6 to 12 inches deep. It is underlain by a reddish-yellow or yellowish-red sand, which extends to a depth of 3 feet or more. In a few places the surface soil is dark brown, owing to the presence of a relatively large proportion of organic matter and the oxidation of iron compounds.

This type as mapped includes spots of Ruston coarse sand and small areas which contain a little rounded quartz gravel. The spots of coarse sand occur mainly in the uplands in the southwestern part of the county, but are also found in many places on the steep slopes bordering the valley of the Chattahoochee River. There are also small areas with a red subsoil, which would have been mapped as Orangeburg sand if of sufficient size to be shown separately.

This type, which has a total area of 5 square miles, is confined largely to the northwestern and northern parts of the county. It borders the Swamp in places along Little Choctawhatchee River and occurs in a similar position along the bottoms of Panther Creek and its tributaries and in a few spots on the lower slopes of Beaver Creek. Most of the type occupies the slopes to streams. It is well drained, and crops mature early on it. On the slopes it dries out rapidly, and crops are frequently injured, but it is not as droughty as the Norfolk sand in a similar position.

About 60 per cent of this type supports a growth of longleaf pine through which there is a scattering of hickory. Where cultivated it is used principally for the production of corn and cotton, which are supplemented by forage crops and vegetables. Oats, cowpeas, and peanuts are occasionally grown for forage or pasture. Velvet beans and peanuts are commonly grown between corn rows. Land of this type is held at $15 to $40 an acre.

The Ruston sand commonly contains more organic matter than the Norfolk sand, but the supply is far from adequate for best results with crops, and steps should be taken to remedy this condition. The adoption of a definite rotation, in which legume crops are included, and the turning under of such crops from time to time, together with other crop residues, is about the only way to supply organic matter in the absence of a sufficient supply of stable manure. Cover crops should be used to prevent erosion. Oats and vetch or rye and vetch are good for this purpose. These crops will add organic matter and materially increase the productiveness of the soil of sloping areas where washing is greatest.

RUSTON LOAMY SAND.

The surface soil of the Ruston loamy sand consists of a grayish-brown to light-brown loamy sand, 5 to 10 inches deep. It rests upon a subsoil of yellowish-red to reddish-yellow loamy sand, which becomes more compact and slightly sticky with depth, and in places passes at depths of 30 to 36 inches into the typical sandy clay sub-

soil of the heavier Ruston soils. Included with this type in the southern part of the county is some Ruston loamy fine sand, most of which occurs west of Cowarts Creek and around Hickory Grove Church.

The Ruston loamy sand has a much wider distribution in the county than the Ruston sand. The largest area is mapped in the southeastern part of the county, east of Crosby, and extends from the Florida line north beyond Jerusalem Church. The type also occurs on the east side of Cowarts Creek, north and south of Baymore Mill Pond, and in a few small areas in the northwestern part of the county. The surface of the type, as it occurs on the uplands or broad interstream areas, is flat to slightly undulating, while on the slopes it may be steeply or gently inclined. Surface drainage is well established and underdrainage is good.

About 60 per cent of the type is under cultivation; the rest supports a growth of longleaf pine, through which there is a scattering of various species of oak, some hickory, dogwood, and persimmon. Wild grasses and broom sedge form a characteristic undergrowth. Most of the merchantable timber has been removed from this type.

The Ruston loamy sand, because of its large extent, may be considered one of the important agricultural soils of the county. It is easy to work and warms up early in spring, though not quite so early as the Norfolk sand. It is, however, considered a more productive type than the Norfolk sand. It is especially well adapted to growing truck crops, although not used much for this purpose. Muskmelons, watermelons, Irish potatoes, and sweet potatoes all do unusually well on this type. With good culture and moderate fertilization Irish potatoes yield from 80 to 100 bushels and sweet potatoes 100 to 150 bushels per acre. Most of the type, however, is used for the production of cotton and corn. Cotton yields one-fourth to one-third bale, and corn from 15 to 25 bushels per acre. All crops are fertilized. Land of this type ranges in price from $25 to $50 an acre, depending on location and improvements.

Should commercial truck growing ever be developed in this section, this will be found one of the most valuable soils for this purpose, as the surface in general is such that all kinds of labor-saving machinery can be used and crops can be economically produced. To increase or maintain the productiveness of this type for general farm crops, it will be necessary to build up its supply of organic matter.

RUSTON SANDY LOAM.

The surface soil of the Ruston sandy loam consists of an upper layer of a gray or grayish-brown to light-brown loamy sand 5 to 8 inches thick, grading into a layer of yellow or reddish-yellow sandy loam, which extends to a depth of 10 to 15 inches. The subsoil is a reddish-yellow or yellowish-red compact but friable sandy clay to a depth of 3 feet or more. On some of the slopes the upper layer of the

soil rests directly upon the subsoil, and the change from one to the other is abrupt, but in the more level situations the intermediate layer is generally present.

Included with this type are a few spots of Hoffman sandy loam. These are characterized by a gray to brown surface soil and a variegated subsoil of gray, purple, brown, red, and yellow colors. Such spots occur one-fourth mile west, 1 mile southeast, and 1½ miles south of Pleasant Plain Church, 2 miles south of Cowarts, and locally in the deeper cuts throughout the uplands. Local spots of Ruston gravelly sand and of the Norfolk, Orangeburg, Greenville, and Tifton sandy loams, too small to separate, are also included.

The Ruston sandy loam, which covers a total area of 61,376 acres, is found in all parts of the county. It is typically developed north of Gordon, along Cedar and Jackson Creeks and their tributaries, in the vicinity of Taylor, and in many places throughout the northern and northwestern part of the county. The topography is flat to rolling. On the tops of the divides it is flat to gently undulating, and near the streams it may be steeply or gently sloping. Drainage is well established. In local spots, particularly on the steeper slopes, surface wash has exposed the underlying sandy clay.

This is an important soil, and probably one-half of it is under cultivation; the rest supports a growth of pine, through which there is a scattering of oak and hickory. Where cultivated it is used principally in growing corn and cotton, supplemented by velvet beans, peanuts, cowpeas, and oats. Nearly every farm has a home garden and fruit trees. Cotton yields one-fourth to one-half bale, and corn from 15 to 40 bushels per acre. Oats are an important crop and give fairly good yields. The crop is usually cut green for hay. Velvet beans and peanuts are grown between the corn rows. The beans and peanuts may be harvested, or they may be used for pasturing hogs after the corn is removed. Cowpeas are usually grown as a forage or soil-improvement crop. Cotton and corn are fertilized with cottonseed meal and ground phosphate rock. Most of the available barnyard manure is put on corn land. The amount of fertilizer applied varies, but most of the farmers use about 100 pounds of cottonseed meal and 200 pounds of ground phosphate rock per acre. Occasionally some nitrate of soda is applied.

The Ruston sandy loam is recognized as a good type for general farming. It is considered slightly more productive than the Norfolk sandy loam and not quite as productive as the Orangeburg and Greenville sandy loams. It is easy to work and with proper handling can be developed to a high state of productiveness.

No definite system of crop rotation is practiced. Corn and cotton may be grown in alternate years in the same fields, the yields being maintained by use of commercial fertilizers and the growing of legumes in corn rows.

Land of this type is valued at $50 to $100 an acre, depending on location and improvements.

The content of organic matter in this soil in many places is low, and the supply should be increased. In the absence of adequate supplies of animal manures the best means of doing this is to plow under an occasional green crop, preferably one of the legumes. Deeper and more thorough tillage, the maintenance of the supply of organic matter, and the systematic rotation of crops, including the legumes, is necessary for the best results on this type.

Ruston sandy loam, pebbly phase.—The surface soil of the Ruston sandy loam, pebbly phase, consists of a gray to grayish-brown or brown sandy loam to a depth of 5 to 10 inches. The subsoil is a yellowish-red or reddish-yellow friable sandy clay, which normally continues to a depth of 3 feet or more. Mixed with this fine-earth material and scattered over the surface occur rather large quantities of small rounded iron concretions. Occasional brown spots in the subsoil represent these concretions in process of formation or disintegration.

This phase is of small extent, but occurs in all parts of the county, usually in close association with other Ruston soils. One of the largest areas lies northwest of Hodgesville, and many small spots occur throughout the central and western parts of the county. It has a topography similar to that of the Ruston sandy loam and is utilized and handled in much the same manner. It is considered slightly better for growing cotton than the typical soil, but it is more susceptible to erosion. It has about the same selling value as the Ruston sandy loam.

NORFOLK SAND.

The Norfolk sand consists of 5 to 8 inches of a very light gray or yellowish-gray sand, underlain by a yellow to pale-yellow or slightly brownish yellow sand that extends to a depth of 3 feet or more. Both the soil and subsoil are loose and porous. In the forested areas the first inch or two contains enough vegetable matter to give it a brown color and in places below this layer the soil is brownish yellow. A little quartz gravel is present here and there over the type. In the south-central part of the county are small areas of Norfolk fine sand, which differ from the sand only in texture. These spots are noticeable along Buck Creek, north of Rama Church, and also northwest of Hickory Grove School.

The Norfolk sand is found in all parts of the uplands. The largest areas lie between Gordon and the Florida line and include the village of Crosby. The type is also mapped around Florida Pond, on the Florida line bordering Spring Creek, and in other places in this part of the county. It occurs on low slopes in the more rolling country of the northern and northwestern part of the county and is developed on the more level uplands in the southeastern part. Owing to its position and its open, porous structure, the type possess excellent surface and internal drainage.

Probably 30 or 40 per cent of this type is under cultivation; the rest of it supports a mixed growth of pine, scattering oak, and hickory. The original growth was an almost pure stand of longleaf pine. Where cultivated, it is used chiefly for the production of cotton, corn, and vegetables. Cotton yields from one-sixth to one-third bale and corn from 8 to 15 bushels per acre. Cowpeas, velvet beans, peanuts, and truck crops do well, although the yields are not as high as on the heavier soil types.

The Norfolk sand is easy to work. It warms up early in the spring, and crops mature earlier on it than upon any other type of the Norfolk series. It is not very retentive of moisture, and crops frequently suffer slightly during periods of dry weather. The yields depend greatly on the use of commercial fertilizers and manures. The soil is rather light for general farm crops, but fairly good yields can be obtained where the land is improved regularly by turning under leguminous crops and other organic manures. It is good soil for the production of early truck crops. Land of this type is valued at $15 to $40 an acre, depending on location and improvements.

NORFOLK LOAMY SAND.

The surface soil of the Norfolk loamy sand consists of a gray to yellowish-brown loamy sand, about 8 inches deep. The subsoil is a pale-yellow friable loamy sand, which usually extends to a depth of 30 to 36 inches. In a few places it is underlain at about 30 inches by a pale-yellow friable sandy clay. Included in an area of this type, lying 1¼ miles east of Macedonia Church, there is a small area that has the texture of a coarse loamy sand.

The Norfolk loamy sand is of small extent in the county. The largest area occurs in the vicinity of and east and northeast of Macedonia Church. Many small spots are found through the central part of the county. The surface is generally flat or only slightly undulating, but the drainage is nevertheless good.

Probably 60 per cent of this type is under cultivation; the rest of it supports a mixed growth of longleaf pine, various kinds of oak, and hickory. The land is used for the production of cotton, corn, velvet beans, cowpeas, oats, and sweet potatoes. The reported yields of cotton range from one-fourth to one-half bale, corn 8 to 20 bushels, and oats 10 to 20 bushels per acre. Cowpea hay yields are low, but peanuts and velvet beans give better results. Commercial fertilizers are applied to all crops, the heaviest applications being given to cotton and corn. Most of the farmers use a complete fertilizer, but some apply 100 pounds of cottonseed meal and 100 pounds of ground phosphate rock, and follow this in the spring with 75 pounds of nitrate of soda per acre.

The Norfolk loamy sand is a slightly stronger soil than the Norfolk sand, owing chiefly to the fact that a sandy clay subsoil is nearer the surface. Because of this the loamy sand is more retentive of moisture and shows the effects of the addition of organic matter

or manure for a longer period. Land of this type sells at $20 to $50 an acre, depending on improvements and location.

The Norfolk loamy sand is very easy to work. It warms up quickly in the spring, and crops mature early on it. It is well suited to the growing of truck crops, peaches, dewberries, watermelons, and asparagus. One of the essential needs of this loamy sand is humus. This can be supplied by turning under leguminous crops and by the addition of barnyard manure.

NORFOLK SANDY LOAM.

The surface soil of the Norfolk sandy loam in cultivated areas consists of a gray to grayish-brown or slightly yellowish brown loamy sand to light sandy loam, passing at about 6 to 8 inches into a pale-yellow loamy sand or light sandy loam, which extends to a depth of about 12 to 18 inches. The typical subsoil is a pale-yellow to yellow friable sandy clay, which continues to a depth of 3 feet or more. In forested areas there is a shallow covering of brown loamy sand which carries a small amount of leaf mold, and the surface soil underneath this is yellowish brown in color. Here and there a few small rounded quartz fragments are scattered over the surface and mixed with the soil, and where this type adjoins the Tifton sandy loam there is in places a noticeable quantity of brown rounded iron concretions or pebbles.

Included with the Norfolk sandy loam are areas of Norfolk coarse sandy loam, which differs from the sandy loam in that the sand particles are coarser and the soil is slightly more porous. Spots of this coarser material occur northeast of Macedonia Church, west of Selma Church, and southeast of Taylor. In the southern and south-central parts of the county the Norfolk sandy loam grades toward the fine sandy loam, and in many places it was difficult to draw a definite boundary between these types.

The Norfolk sandy loam, which is the largest and most important soil in Houston County, has a general distribution throughout the central, southern, and eastern parts. It is developed in broad, continuous areas in the vicinity of Ashford and Cowarts and southwest of Columbia.

This type has an undulating to gently rolling topography, which becomes rolling in a few places near the streams. It all has a surface favorable for agriculture and the use of improved machinery. The natural drainage is generally good.

Most of this type was originally forested with longleaf pine, but practically all of the merchantable timber has been removed. From 50 to 60 per cent of the type is now under cultivation; the rest supports a growth of long leaf pine, oak, hickory, and dogwood. Some of the land has been cut over but has not been cleared of stumps and underbrush.

This soil is used principally for the production of corn and cotton. The crops of secondary importance are oats, sweet potatoes, sugar

cane, peanuts, cowpeas, velvet beans, and castor beans. The yields of cotton under boll-weevil conditions are quite variable, and generally very low, but some farmers obtain from one-third to three-fourths bale per acre. Corn yields range between 15 to 50 bushels per acre, with an average of 20 to 25 bushels; oats, 15 to 30 bushels; sweet potatoes, from 80 to 250 bushels; sugar cane, from 100 to 200 gallons of sirup per acre; cowpea hay yields from 1½ to 2 tons per acre; and velvet beans and peanuts do remarkably well. Very little fruit is grown on this soil, but there is a wide range of garden vegetables, all of which do well.

Commercial fertilizers are used for practically all crops, except on land that has been manured. Most of the farmers use a complete fertilizer and apply 300 to 500 pounds per acre. Some nitrate of soda is used as a top dressing.

Land of this type ranges in price from $30 to $80 per acre, depending on the location and character of the improvements.

The Norfolk sandy loam is one of the best general-purpose soils in the Coastal Plain. In addition to being well suited to the production of cotton, peanuts, corn, tobacco, sugar cane, sweet potatoes, and other field crops, it is also well suited to the growing of truck crops. Of course these do not mature quite as early as upon the Norfolk sand or loamy sand, but the yields are usually larger. The soil responds readily to the application of manures and commercial fertilizers, and can be built up to a high state of productivity. It warms up early in the spring and is very easily handled. For the improvement of this soil it is recommended that it be supplied with liberal quantities of organic matter by turning under green-manuring crops or by the addition of barnyard manure.

Norfolk sandy loam, flat phase.—The flat phase of the Norfolk sandy loam differs from the type mainly in that the surface is flat and level and the natural drainage is not so good. Open ditches are necessary for adequate drainage. It is developed principally in the eastern and southeastern parts of the county, where it occurs in close association with the Plummer sandy loam. In the lower situations, and where the drainage is especially poor, the lower part of the subsoil is more or less mottled with gray.

The flat phase is commonly referred to as the flatwoods. Only a small percentage of it is cultivated. It is used for practically the same crops as the Norfolk sandy loam, and the yields are about the same or slightly lower. It can be improved in the same way as the typical soil.

Norfolk sandy loam, deep phase.—The surface soil of the Norfolk sandy loam, deep phase, is a gray to yellowish-brown loamy sand to a depth of about 8 inches. This layer rests upon layers of loamy sand of pale-yellow color, which extends to a depth of 20 to 30 inches, where it grades into a pale-yellow sandy clay.

This phase is very inextensive, being found generally in small spots in the central and western parts of the county. Areas lie

three-fourths mile west of Sardis Church, west of Mount Pleasant Church, around Pleasant Grove Church, north of Madrid, and around St. Marys Church. Other small spots, usually associated with other Norfolk soils, are scattered throughout this section. The phase occupies level to gently rolling country and is generally well drained. Sometimes it occurs on the lower slopes, where the deep sandy surface soil has developed by soil creep or wash.

Probably 30 per cent of this phase is under cultivation; the rest supports a growth of longleaf and shortleaf pine, through which there is a scattering of various kinds of oaks, some hickory, and dogwood. The land is handled in practically the same way and used for about the same crops as the typical soil. The yields on the phase are generally lighter. The land has about the same selling value as the Norfolk loamy sand.

NORFOLK FINE SANDY LOAM.

The surface soil of the Norfolk fine sandy loam consists of a gray to grayish-brown loamy fine sand underlain at 5 to 8 inches by pale-yellow or yellowish-gray fine sandy loam, which extends to a depth of 10 to 15 inches. Below this is the typical subsoil, consisting of a pale-yellow friable fine sandy clay, which extends to a depth of 3 feet or more. In places, particularly in the flatter areas, the lower subsoil is mottled yellow and gray, and the surface soil passes rather abruptly into the subsoil.

The Norfolk fine sandy loam, an inextensive type, is developed in the south-central part of the county, excepting the area north and northeast of Pleasant Plain School. It is mapped along the railroad between Union Hill Church and Cottonwood, northeast of Cottonwood, northeast of Union Hill Church, southeast and southwest of Hodgesville, southeast of Keyton, around Jones School, and in many other small spots throughout this section. The type has a slightly undulating to gently rolling topography. Some of it occurs in close association with the flatwoods soils.

Probably about 40 per cent of this type is under cultivation; the rest supports a growth of longleaf pine, with a scattering of hickory and dogwood. The cultivated land is used principally for the production of cotton and corn, though a number of other crops, including oats, sweet potatoes, Irish potatoes, sugar cane, velvet beans, cowpeas, and peanuts, are grown to greater or less extent. Cotton yields from one-fourth to one-half bale, corn 15 to 30 bushels, sweet potatoes 75 to 200 bushels, Irish potatoes 30 to 60 bushels, and sugar cane 100 to 200 gallons of sirup per acre. Cowpeas, usually grown for forage, yield from 1 to 2 tons of hay per acre. Peanuts are grown both for the nuts and to supply pasturage for hogs. Velvet beans are commonly grown in the corn.

No definite system of rotating crops is practiced, although on a few farms cotton is followed by corn, in which peanuts and beans are planted, and oats are followed by cowpeas. It is not uncommon

for cotton to be grown in the same field until the yields decline. The methods of fertilization are practically the same as on the Norfolk sandy loam.

The Norfolk fine sandy loam is recognized as an excellent soil for farm crops. It is valued at $30 to $75 an acre, depending on location and improvements.

Norfolk fine sandy loam, flat phase.—The flat phase of the Norfolk fine sandy loam differs from the type mainly in that the surface is level and smooth and the drainage conditions are not so good. This phase occurs in the southern part of the county. It is used for the same crops and is handled in about the same way as the typical soil. On account of the poor surface drainage only a small part of this phase has been put under cultivation.

TIFTON SANDY LOAM.

The surface soil of the Tifton sandy loam is a gray to yellowish-brown loamy sand or sandy loam, grading at about 4 to 6 inches into a yellow sandy loam, which continues to a depth of 8 to 10 inches. The subsoil consists of yellow, deep-yellow, or ocherous-yellow friable sandy clay, which usually extends below 3 feet. Large quantities of small round iron concretions are scattered over the surface and throughout the soil and subsoil. The quantity in some places is sufficient to give the surface a rich brown color. The subsoil contains many brown spots which appear to be these iron concretions in process of formation or decay.

Included with the Tifton sandy loam is an area of Tifton fine sandy loam. This area is situated in the northeastern part of the county, on the Abbeville road, and includes the grounds of the Pleasant Plain School. Spots of the Orangeburg, Norfolk, and Ruston sandy loams, too small to show separately on the map, are also included.

The Tifton sandy loam is an inextensive type in this county. One well-developed area includes the city of Dothan. The type also occurs in the vicinity of Ashford, north of Friendship Church, west of Pansey, north, south, and southeast of Odom School, north of Newton Springs, 1 mile west of Barrett, and in many other small scattered areas.

The Tifton sandy loam usually occupies the more elevated areas in the uplands, and the surface varies for the most part from flat to gently rolling, though being more furrowed and rougher near the streams. In general the drainage is adequate, but there are poorly drained spots on the flatter areas where drainage ways have not yet reached. On the slopes drainage in places is excessive and wash has removed the surface soil and exposed the underlying sandy clay.

Probably 75 per cent of this type is under cultivation; the rest supports a mixed growth of pine, oak, and hickory. Native grasses flourish, and sod is thick and evenly distributed over the surface in many places. The cultivated part is used principally for the pro-

duction of corn and cotton, supplemented by velvet beans, peanuts, corn, cowpeas, oats, potatoes, and sugar cane. Cotton yields from one-fourth to one-half bale, corn 15 to 40 bushels, sweet potatoes 100 to 200 bushels, Irish potatoes 40 to 100 bushels, and sugar cane 100 to 200 gallons of sirup per acre.

The Tifton sandy loam is considered by the farmers of this section to be slightly more productive than the Norfolk sandy loam, but not quite as productive as the Orangeburg sandy loam. It is well adapted to general farm crops and can be developed to a high state of productiveness. The greater part of this type has a surface favoring the use of labor-saving machinery. The soil is retentive of moisture, and crops rarely suffer in dry spells. It is easy to work, and the pebbles do not interfere with cultivation. The systematic rotation of crops, thorough tillage, and the maintenance of a good supply of organic matter, are the greatest needs of this soil.

Land of the Tifton sandy loam is valued at $50 to $150 an acre. The higher prices obtain in the country around Dothan, which, as noted, is situated mainly on this soil.

GRADY CLAY LOAM.

The surface soil of the Grady clay loam consists of a gray to grayish-brown clay loam 4 to 6 inches deep. This is underlain by a mottled yellow and gray clay, in places spotted with red between depths of 15 and 24 inches, grading below into a heavy clay mottled drab, yellow, and gray. Included with this type, 2 miles south of Columbia, is a small spot of Myatt clay loam.

The Grady clay loam is inextensive in this county. It is mapped west, northwest, and northeast of Wicksburg in the Greenville and Orangeburg soils, west and northwest of Barrett, between Cowarts Creek and Rocky Creek, north, south, and west of Rocky Creek School, north and southwest of Ashford, and in spots scattered throughout the county. All the areas are small.

The Grady clay loam occupies the saucerlike depressions or sinks in the upland which are a characteristic feature of this southern section of Alabama. The depressions have no natural drainage outlets, except through the underlying limestone, and these openings not infrequently become clogged. The surface soil is usually wet, and in many places, particularly where there is a thick growth of cypress, it is covered with water throughout the year. The timber growth generally is a mixture of sweet gum, sour gum, pine, hickory, cypress, and mayhaw. The undergrowth consists of swamp grasses and other plants partial to heavy, wet soils.

It is quite probable that this type is derived in part from the underlying limestone. The sinks in which it occurs are formed by the dissolving and leaching out of the limestone and the subsidence of the overlying material.

The Grady clay loam has no present agricultural value, on account of its poor drainage. When properly drained it is capable of producing good crops of corn, cotton, oats, and grasses.

PLUMMER SANDY LOAM.

The surface soil of the Plummer sandy loam is a gray to dark-gray light sandy loam 5 to 10 inches deep. This passes rather abruptly into a whitish-gray sandy clay, which is underlain at various depths by gray to drab, or mottled gray and drab, heavy, sticky clay. In places the heavy clay is not encountered within the 3-foot section, and in other places the lower subsoil resembles that of the Grady clay loam.

Around the heads of watercourses the boundaries between this type and Swamp were difficult to define, and in many places are arbitrary. In the southeastern part of the county, particularly where the type is closely associated with the Norfolk and the Ruston fine sandy loam, the surface soil is a fine sandy loam in texture.

The Plummer sandy loam is restricted largely to the eastern, central, and southern parts of the county. It constitutes the land near the heads of drainage ways. The drainage is generally poor, and nearly all areas are saturated with water by the seepage from adjoining higher areas of Norfolk and Ruston soils. The type is characterized by a growth of gallberry bushes and pitcher plant. It also supports a scattered growth of pine, gum, bay, cypress, and magnolia. It is not farmed at present, on account of poor drainage, and is one of the least desirable soils in the county.

CAHABA SANDY LOAM.

The surface soil of the Cahaba sandy loam consists of a gray to light-brown or yellowish-brown sandy loam, with a depth of 6 to 10 inches. The typical subsoil is a heavy sandy clay, brownish yellow, light red, or reddish yellow in color, though in places a firm, reddish-yellow, friable clay.

Included with this type are small spots of Cahaba loamy sand and Cahaba fine sand. These are confined to three small narrow strips in the Chattahoochee River Valley east of Calumet and south of Columbia.

The Cahaba sandy loam is of small extent in this county. Most of it occurs on the second bottoms of the Chattahoochee River. The largest area is north and northeast of the Tindell Mill Pond. A few small areas are mapped on the second bottoms of Spring and Big Creeks near the Florida line. The type is not overflowed yearly, but is subject to occasional floods. The surface of the type in the Chattahoochee River Valley is marked by a number of small circular sinks or ponds, some of which are filled with water throughout the year.

Probably one-half of this type is under cultivation. The rest supports a mixed growth of longleaf and shortleaf pine, various species of oak, some hickory, and beech. The type is generally recog-

nized as the most productive soil of the second bottoms for general farm crops, though crops do not mature quite so early on it as on the Kalmia fine sandy loam. The soil is easily cultivated and is quite retentive of moisture. It is used chiefly for the production of corn and cotton. Occasional crops of sugar cane, cowpeas, velvet beans, and peanuts are grown. Cotton produces one-fourth to one-half bale, corn 15 to 30 bushels, sugar cane 150 to 200 gallons of sirup per acre.

Land of this type is valued at $20 to $60 an acre, depending on location and improvements.

The frequent incorporation of organic matter, thorough tillage, a systematic rotation of crops to increase the interval between the corn and cotton crops, and the growing of winter cover and summer forage crops, are necessary to maintain or increase the productiveness of this type.

KALMIA FINE SAND.

The surface soil of the Kalmia fine sand consists of a gray to grayish-brown loamy fine sand about 4 inches deep. This is underlain by a yellow fine sand, which extends to a depth of 3 feet or more.

As mapped in this county the type includes a small spot of Kalmia very fine sand situated 1 mile north of Alaga and some spots of Kalmia sand along the Little Choctawhatchee River.

The Kalmia fine sand occurs principally on the second bottoms of Choctawhatchee River, but it is not an extensive type.

Most of it supports a mixed growth of pine, oak, and hickory. A small part is under cultivation and is used principally for cotton and corn. This soil has about the same crop value as the Norfolk sand, but is slightly more productive on account of its compact subsoil, which makes it more retentive of moisture. The type is well drained and easy to cultivate, and is admirably adapted to the production of early truck crops. The yields of corn and cotton are greatly increased by the incorporation of organic matter with the soil. Land of this type is valued at $15 to $40 an acre, depending on location and improvements.

KALMIA FINE SANDY LOAM.

The surface soil of the Kalmia fine sandy loam is a gray to yellowish-brown fine sandy loam, 4 to 6 inches deep, passing into a yellow fine sandy loam which extends to a depth of 8 to 12 inches. The subsoil is a compact, friable, yellow fine sandy clay, which normally extends to a depth of 3 feet or more. In some depressions the surface soil is dark colored and the subsoil is a mottled gray and yellow sandy clay. In places the surface soil passes abruptly into the subsoil.

The type as mapped includes some spots of Kalmia sandy loam, lying usually near streams tributary to the stream along which the terraces occur. One of these is 1½ miles southwest of Indian Mound, another just below the upland near Philadelphia Church, and another

1¼ miles southwest of Perry Landing. Throughout the areas of this type are included also local spots of Myatt fine sandy loam, silt loam, and clay loam, consisting of light-gray surface soil, splotched with brown and carrying iron concretions, and underlain by a gray and yellow mottled clay subsoil.

The Kalmia fine sandy loam is confined to a few small areas on the second bottoms of the Chattahoochee and Choctawhatchee Rivers. The surface of the type is generally flat to slightly sloping, and parts of it are poorly drained. The greater part supports a growth of longleaf and shortleaf pine, with a scattering of oak and hickory. The growth in poorly drained depressions consists of sweet gum, sour gum, live oak, magnolia, and a little cypress, with an undergrowth of gallberry bushes and grasses.

The cultivated areas of this type are used mainly for the production of corn and cotton. Oats, sweet potatoes, sugar cane, peanuts, and velvet beans are also important crops. Cotton yields one-fifth to one-third bale, corn 15 to 25 bushels, sweet potatoes 100 to 200 bushels, and sugar cane 100 to 200 gallons of sirup per acre. Land of this type sells for $15 to $40 an acre, depending on location, improvements, and nearness to market.

The Kalmia fine sandy loam, when properly drained, is an excellent soil for general farm crops, and is particularly adapted to corn, grass, and forage crops. Drainage, deeper and more thorough tillage, maintenance of the supply of organic matter, and systematic crop rotations are the greatest needs of this type.

CONGAREE FINE SAND.

The surface soil of the Congaree fine sand, as typically developed, consists of a brown fine loamy sand or fine sand, about 8 inches deep. This is underlain by a yellowish-brown fine sand which extends to a depth of 3 feet or more. Throughout the soil section there is a relatively large admixture of mica, and the sand grains are rounded and waterworn. Where the type is subject to overflow or in contact with running water, the material is usually a gray or almost white, incoherent, micaceous sand. In places away from the river, where the soil has developed a sod or has been utilized for cultivated crops, it is usually darker in color.

The Congaree fine sand is confined to the first bottoms of the Chattahoochee River and occurs mainly in small areas. It has a flat sloping surface and is generally well drained, although subject to frequent overflows. It is used principally for pasture, but to some extent in growing corn.

CONGAREE FINE SANDY LOAM.

The Congaree fine sandy loam consists of a light-brown to dark-brown fine sandy loam, about 8 inches deep, grading gradually into a yellowish-brown light fine sandy clay or fine sandy loam. In some places the surface soil has bleached to gray, and in slight depressions it is darker than the average. Many variations in texture occur

locally in the subsoil. In places the fine sandy clay stratum may be divided by layers of sand, and in other places by layers of brown clay similar to that found in the subsoil of the Congaree silt loam. The type may include local spots of Congaree fine sand and Congaree silty clay loam too small to separate, and also spots of Congaree sandy loam, in which the soil has been locally modified by deposits of streams tributary to the river.

The Congaree fine sandy loam is confined to the first bottoms of the Chattahoochee River and Hurricane Creek, the soil in the latter location being a heavy variation. It is much more extensive than the Congaree find sand or Congaree silty clay loam.

Comparatively little of this type is under cultivation. Most of it supports a growth of gum, sycamore, beech, hickory, and some pine, with more or less grass, and is used mainly for pasture. Corn is the chief crop. It yields from 30 to 50 bushels per acre and is rarely fertilized. Land of this type is seldom sold except with the adjoining uplands. It is considered a valuable soil for corn and grasses.

CONGAREE SILTY CLAY LOAM.

The Congaree silty clay loam consists of a brown silty clay loam, about 10 inches deep, passing rather abruptly into a subsoil of reddish-brown silty clay, which usually extends to a depth of 3 feet or more. In places the color of the surface soil varies from the typical brown to gray or yellow, and there is considerable local variation in color of the subsoil, the reddish brown giving way in places to bluish black or black. The type as mapped includes small spots of Congaree silt loam and fine sandy loam, and local strips of heavy black clay.

The Congaree silty clay loam normally occupies the lowest part of the first bottoms of the Chattahoochee River. It is subject to frequent overflow, and contains many long narrow lakes or ponds, some of which dry up in summer and fall. The greater part of the type is cleared and used for pasture or devoted to the growing of corn. It is naturally the most fertile and if protected from overflow and properly handled, would be one of the most productive soils in the county.

SWAMP.

Swamp, which represents a condition rather than a soil type, includes those areas, bordering the rivers and streams, that are generally wet or covered with water throughout the year. Generally it consists of a heterogenous mixture of sand, silt, and clay, with organic matter in various stages of decomposition, or it may consist of small areas of sand, sandy loam, or even clay, which range in color from gray to black. Most of it lies only a few feet above the normal overflow in the streams and much of it is continually wet.

Swamp includes spots of Bibb sand, and of Ochlockonee fine sand, sandy loam, and clay loam, too small to map separately. These occur in narrow beds near the channels of some of the larger streams. The Bibb material is usually characterized by white color, and the Ochlockonee by brown color. In addition to these variations there are some areas of muck or mucky material consisting of a black, spongy mass of organic matter in an advanced stage of decomposition, with a small percentage of mineral matter. One of the largest of these is in Jordans Bay, another large one is near the confluence of Buck and Big Creeks, and many small spots are scattered throughout the areas of Swamp.

Most of the Swamp areas support a mixed growth of gum, magnolia, swamp pine, bay, birch, some cypress and tupelo gum, and an undergrowth of swamp grass and bamboo brier. It has no agricultural value at present, although used to some extent for summer pasturage.

SUMMARY.

Houston County is situated in the extreme southeastern part of the State of Alabama, along the Florida line. It was formed in 1903 from parts of Henry, Dale, and Geneva Counties. It has an area of 579 square miles, or 370,560 acres.

The county is situated in the central part of the physiographic division known as the Coastal Plain. The topography ranges from flat to rolling. The surface has a general slope to the southeast. The drainage is effected by the Choctawhatchee and Chattahoochee Rivers. The county is rather thickly settled and contains no large tracts of unoccupied land. Dothan, the county seat, with a population of 10,034, is a progressive city and an important wholesale manufacturing center.

The county has a good system of public highways and excellent transportation facilities.

The climate of Houston County is mild and temperate. It has a mean annual temperature of about 66° F., and a mean annual precipitation of about 50 inches, which is well distributed throughout the year. The growing season of about 250 days is ample for the production of a large range of crops.

The present agriculture consists of the production of corn, cotton, pea-vine hay, peanuts, velvet beans, sweet potatoes, and sugar cane, some beef cattle, and hogs.

Most of the farms are small, ranging from 40 to 160 acres. Efficient farm laborers are generally scarce.

No general system of crop rotation is practiced, but there is an effort to maintain and increase yields by the use of fertilizers and the growing of leguminous crops.

The soils of the uplands are of the Greenville, Orangeburg, Ruston, Norfolk, Tifton, Grady, and Plummer series. With the exception of the Plummer and Grady types, and a part of the Norfolk fine sandy loam, all these are well-drained.

The soils of the first bottoms consist of types of the Congaree series and Swamp. The higher terrace soils fall into the Cahaba and Kalmia series.

The Norfolk sand, Ruston sand, and Kalmia fine sand are excellent soils for early truck. The Norfolk sand and Kalmia fine sand have surfaces well adapted to farming.

The Ruston, Norfolk, and Greenville loamy sands are slightly stronger soils for general farm crops than the sand soils, and are also better adapted to truck growing, except where extreme earliness is the thing most desired.

The Norfolk, Tifton, Ruston, Greenville, and Cahaba sandy loams are the best soils for general farming.

The Congaree soils are naturally productive, but their use is restricted to a few crops because of frequent overflow.

The Grady clay loam and Plummer sandy loam have no agricultural value at present on account of poor drainage.

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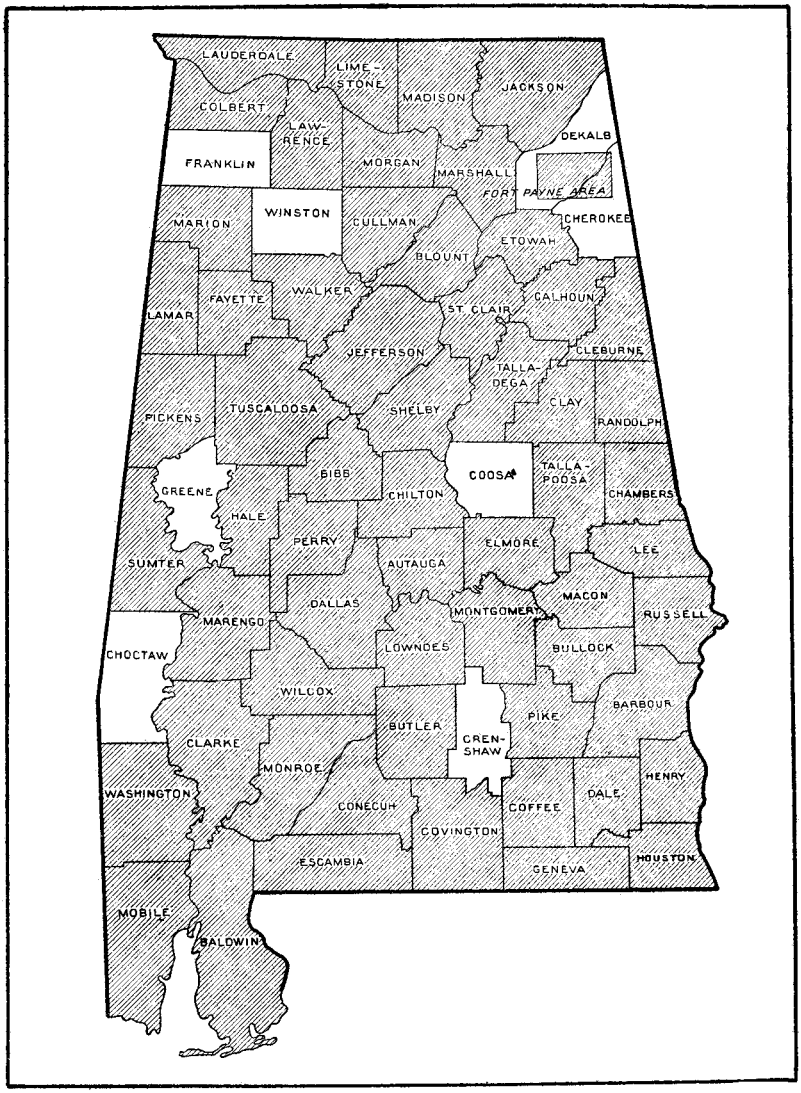

Areas surveyed in Alabama shown by shading.

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U. S. DEPARTMENT OF AGRICULTURE
BUREAU OF SOILS
IN COOPERATION WITH THE
ALABAMA DEPARTMENT OF AGRICULTURE
AND INDUSTRIES

SOIL MAP

ALABAMA
HOUSTON COUNTY SHEET


R. 24 E.
R. 25 E.
R. 26 E.
R. 27 E.
R. 28 E.
R. 29 E.
R. 30 E.
T. 4 N.
T. 3 N.
T. 2 N.
T. 1 N.
T. 7 N.
R. 12 W.
R. 11 W.
R. 10 W.
R. 9 W.
R. 8 W.
DOTHAN
LEGEND
Cahaba sandy loam
Cs
Norfolk sand
Ns
Congaree fine sand
Cg
Norfolk loamy sand
N
Congaree fine sandy loam
Cm
Norfolk fine sandy loam
Nf
Congaree silty clay loam
Cy
Flat phase
Greenville loamy sand
Gr
Orangeburg sandy loam
Os
Greenville sandy loam
Gs
Plummer sandy loam
Pl
Grady clay loam
Gc
Ruston sand
R
Kalmia fine sand
K
Ruston loamy sand
Rs
Kalmia fine sandy loam
Kf
Ruston sandy loam
Rl
Norfolk sandy loam
Nl
Pebbly phase
Flat phase
Tifton sandy loam
Ts
Deep phase
Swamp
S
CONVENTIONAL SIGNS
CULTURE
(Printed in black)
City or Village, Roads, Buildings, Wharves, Jetties, Breakwater, Levee, Lighthouse, Fort.
Secondary roads and Trails
DOUBLE TRACK
SINGLE TRACK
JUXTAPOSITION
IN ROAD
Railroads Steam and Electric
Bridges, Ferry
R R ABOVE
R.R. BELOW
R.R. crossings, Tunnel
Ford. Dam
CEM
School or Church Cemeteries
Mine or Quarry. Mine dumps. Made land
Bluff, Escarpment, Rock outcrop and Triangulation station
Stony and Gravelly areas
Soil boundaries
STATE
COUNTY
Boundary lines
LAND GRANT
CITY OR VILLAGE
Boundary lines
CIVIL TOWNSHIP
RESERVATION
Boundary lines
U.S. township and section lines
RELIEF
(Printed in brown or black)
Contours Depression contours
Prominent Hills Mountain Peaks
Sand. Wash and Sand dunes
Shore and Low-water line, Sandbar
DRAINAGE
(Printed in blue)
Streams
Lakes, Ponds, Intermittent lakes
Intermittent streams
Springs, Canals and Ditches, Flumes
Swamp Salt marshes
Submerged marsh. Tidal flats
The above signs are in current use on the soil maps. Variations from this usage appear in some maps of earlier dates.

Soils surveyed by R. T. Avon Burke, in charge,
and A. T. Sweet.

1 ½ 0 1 2 3 4 Miles
Scale 1 inch-1 mile.

Field Operations
Bureau of Soils
1920